

REMARKS/ARGUMENTS

After the foregoing Amendment, Claims 1 - 28 are currently pending in this application. Claims 3 - 5, 10 - 14, 17 - 18, and 24 - 28 have been withdrawn from consideration. Claims 1 - 2, 6, 8, 15 - 16, 19 - 20, and 22 have been amended. Applicant submits that no new matter has been introduced into the application by these amendments.

Claim Objections

Claims 6, 8, 19 - 20, and 22 were objected to because of formalities. The amendment of those claims obviates the objection. Accordingly, withdrawal of the objection is respectfully requested.

Claim Rejections - 35 USC § 103

Claims 1 - 2, 6 - 9, 15 - 16, and 19 - 23 were rejected in the Action under 35 U.S.C. § 103(a) as obvious over JP(2000-133412). Applicant respectfully traverses the rejection.

An object of the present invention is to provide a method for detecting an arc discharge after the supply of power to a glow-discharge apparatus is re-started and a high-frequency arc-discharge control apparatus for controlling or suppressing the

arc discharge by detecting the arc discharge after the supply of power to the glow-discharge apparatus is re-started.

According to the present invention, the object can be achieved by detecting the arc discharge when V_r/V_f increases to a second level or a higher level within a preset time T_o during which the supply of power is re-started again after the supply of power to the glow-discharge apparatus is first stopped during the time T_1 when $dV_r/dt-dV_f/dt$ increases over a first level, where V_f and V_r are traveling-wave voltage and reflecting-wave voltage supplied to the glow-discharge apparatus, respectively.

On the contrary, JP(2000-133412) discloses a method and an apparatus of suppressing an arc discharge in the glow-discharge apparatus by stopping the power supply to the glow-discharge apparatus when $dV_r/dt-dV_f/dt$ increases over a predetermined level. However, JP(2000-133412) does not disclose a method of detecting an occurrence of a second arc discharge after the power supply to the glow discharge apparatus is re-started unlike the present invention in which the secondly generated arc discharge is detected when V_r/V_f increases to a second level or a higher level within a preset time T_o .

As shown in FIG. 4A, the first arc discharge is detected at a time when a waveform "a" of the reflecting-wave voltage V_r is generated at a time before the

leading edge of the time $T1$, when $dV_r/dt-dV_f/dt$ increases over a first level. The second arc discharge (waveform "b" of the reflecting-wave voltage V_r) occurring during the time $T2$ cannot be detected by the calculation of $dV_r/dt-dV_f/dt$ because the value $dV_r/dt-dV_f/dt$ does not exceed the first level as stated on page 4, lines 3-14 of the specification. According to the present invention the second arc discharge can be detected when V_r/V_f increases to a second level or a higher level within a preset time T_o after the power supply to the glow discharge apparatus is re-started. The JP(2000-133412) reference does not teach nor suggest the detection of the second arc discharge by the increase of V_r/V_f to the second level or more unlike the present invention.

Claims 1 - 2, 6 - 9, 15 - 16 and 19 - 22 claim certain calculations based upon varying arc discharges. These calculations are the result of experimentation and as stated above, the second arc discharge can be detected when V_r/V_f increases to a second level or a higher level within a preset time T_o after the power supply to the glow discharge apparatus is re-started. The Action dismissed these claimed calculations as "obvious" without further explanation as to why, or citation to the prior art. According to MPEP 2144.03[A], "Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of

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instant and unquestionable demonstration as being well-known....It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known." Since the Action specifically states that JP(2000-133412) "does not clearly disclose a first and second level or a higher level within a preset time To after the supply of power to the glow discharge apparatus is stopped" and cites to no reference in support of its obviousness rejection, and the MPEP cautions against this type of rejection except where such ratios would be well-known or capable of instant and unquestionable demonstration, Applicant respectfully request that the rejection be withdrawn.

Regarding the rejection of claims 7 - 9 and 19 - 23 under § 103 over JP(2000-133412) and in view of inherent characteristics, Applicant submits that when a reference is silent about the asserted inherent characteristic, the gap should be filled with extrinsic evidence. MPEP § 2131.01. "Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Id. "The Examiner must provide rationale or evidence tending to show inherency." MPEP § 2112. "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Id. "In relying upon the theory of inherency, the

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Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that an allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Id. (emphasis in original).

Based on the arguments presented above, withdrawal of the § 103 rejection of claims 1 - 2, 6 - 9, 15 - 16, and 19 - 23 is respectfully requested.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

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In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1 - 2, 6 - 9, 15 - 16 and 19 - 23 is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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